TA-N55ES/N330ES

SERVICE MANUAL

E Model
TA-N330ES
US Model
Canadian Model
AEP Model
UK Model
TA-N55ES

TA-N330ES

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 4 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 150 watts per channel minimum RMS power, with no more than 0.01 % total harmonic distortion from 250 milliwatts to rated output.

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 110 watts per channel minimum RMS power, with no more than 0.05 % total harmonic distortion from 250 miliwatts to rated output.

Other specifications

Item	Condition	Model except for North Europe	Model for North Europe
Continuous RMS power output(both channels driven simultaneously)	4 ohms 20 Hz - 20 kHz, THD 0.01 %	150 W + 150 W (DIN: 160 W + 160 W)	—
	6 ohms 20 Hz - 20 kHz, THD 0.03 %	125 W +125 W (DIN: 135 W + 135 W)	100 W + 100 W (DIN: 120 W + 120 W)
	8 ohms 20 Hz - 20 kHz, THD 0.05 %	110 W+ 110 W (DIN: 120 W + 120 W)	80 W + 80 W (DIN: 110 W + 110 W)
	8 ohms monaural, THD 0.05 %	300 W (DIN: 350 W)	—
	12 ohms monaural, THD 0.05 %	—	200 W (DIN: 235 W)

— continued on next page —

STEREO POWER AMPLIFIER

SONY®

Dynamic power	1 ohm stereo (monaural)	450 W (—)	450 W (—)
	2 ohms stereo (monaural)	400 W (750 W)	325 W (625 W)
	4 ohms stereo (monaural)	290 W (680 W)	220 W (450 W)
	8 ohms stereo (monaural)	150 W (500 W)	125 W (370 W)
Power bandwidth (IHF)	4 ohms, THD 0.05 %	5 Hz - 50 kHz at 75W	—
	8 ohms, THD 0.05 %	5 Hz - 50 kHz at 55 W	
Dynamic headroom ('78 IHF)	4 ohms	2.8 dB	—
	8 ohms	1.8 dB	
Total harmonic distortion	4 ohms, at 10 watt output	0.008 %	—
	6 ohms, at 10 watt output	0.006 %	
	8 ohms, at 10 watt output	0.004 %	
Intermodulation (IM) distortion 60 Hz:7 kHz = 4:1	4 ohms, at rated output	0.008%	—
	6 ohms, at rated output	0.006%	
	8 ohms, at rated output	0.004%	
Damping factor	8 ohms, 1 kHz	100	
Slew rate	—	120 V/μsec, 250 V/μsec (inside)	
Residual noise	network A	Less than 90 μV	
Frequency response	INPUT	5 Hz - 200 kHz $^{+0}_{-3}$dB	5 Hz - 100 kHz $^{+0}_{-3}$dB
Input sensitivity	INPUT	180 mV, 20 kohms	
S/N (network) '78 IHF	INPUT	120 dB (A)	

General

System — Super legato linear, purecomplementary SEPP power amplifier, powerful power supply

Power requirements

Model for U.S.A. and Canada:
120 V AC, 60 Hz
Model for continental Europe:
220 V AC, 50/60 Hz
Model for United Kingdom:
240 V AC, 50 Hz
Model for other countries:
120, 220 or 240 V AC, adjustable, 50/60 Hz

Power consumption

Model for U.S.A.: 280 watts
Model for Canada: 580 VA
Model for United Kingdom: 760 watts
Model for North Europe: 190 watts
Model for Europe and other countries: 310 watts

Dimensions

Model for United Kingdom:
Approx. 430 x 150 x 365 mm (w/h/d)
($16\,^{7}/_{8}$ x $5\,^{7}/_{8}$ x $14\,^{3}/_{8}$ inches)
Other models:
Approx. 467 x 150 x 365 mm (w/h/d)
($18\,^{3}/_{8}$ x $5\,^{7}/_{8}$ x $14\,^{3}/_{8}$ inches)

Weight

Model for United Kingdom:
Approx. 11.2 kg (24 lb. 12 oz.), net
Other models:
Approx. 12.2 kg (26 lb. 14 oz.), net

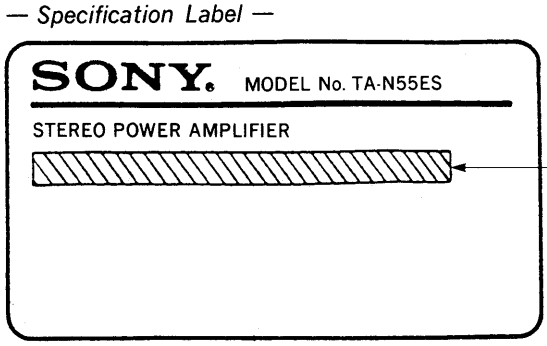
Supplied accesssories

Screws (8) (except for U.K. model)

Design and specifications subject to change without notice.

MODEL IDENTIFICATION

— Specification Label —



US model: AC 120V 60Hz — 280W
Canadian model: AC 120V 60Hz — 580VA
AEP, WG (West Germany) model: AC 220V~50/60Hz
UK model: AC 240V~50/60Hz

SERVICING NOTES

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:
Check the antenna terminals, metal trim,"metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 disital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

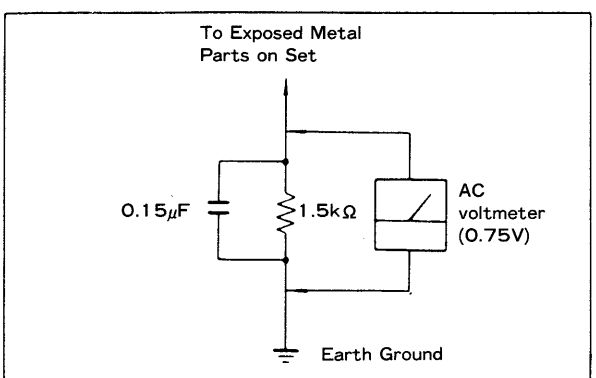
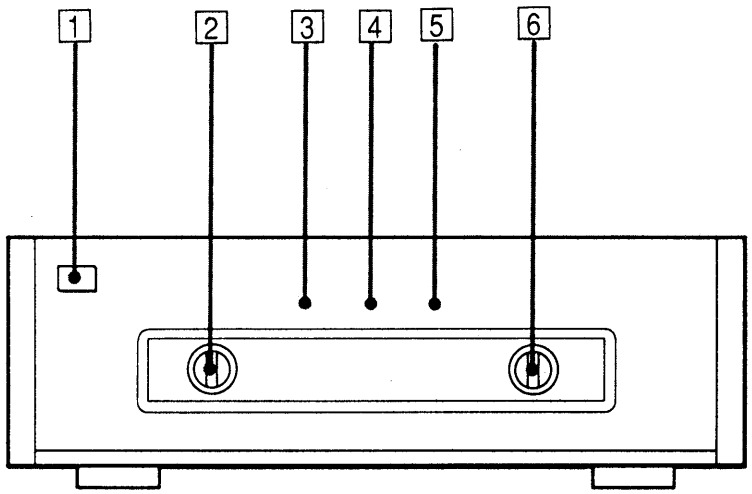


Fig. A. Using an AC voltmeter to check AC leakage.

SECTION 1
GENERAL



1 POWER switch

2 SPEAKERS selector

Selects speaker system A, B or both (A+B).
For headphone monitoring on the connected preamplifier, set the selector to OFF.

3 PROTECTION indicator

Lights up for approximately 4 seconds immediately after turning on the unit. This indicates that the built-in muting circuit is activated.
In normal operating conditions, this does not light. If it lights up (speaker sound is not heard) while operating, an abnormality has occurred. In this case, disconnect the AC power cord and check the connected components and speaker systems.

4 STEREO indicator

Lights up when OPERATION is set to STEREO.

5 MONO indicator

Lights up when OPERATION is set to MONO.

6 ATTENUATOR

Control input signal sound level from the preamplifier. Normally, set it to the click-in center position.

SECTION 2
ELECTRICAL ADJUSTMENTS

PRECAUTIONS

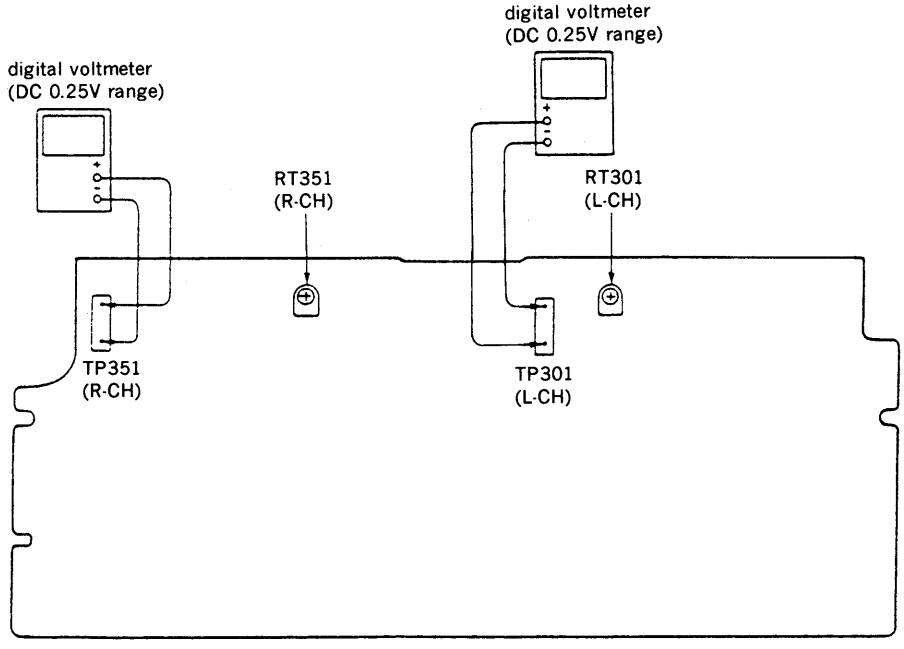
1. Adjust the idling after tuning the unit on for about 10-15 minutes, giving it time to warm up.

2. Always make sure to adjust the idling when repairing the power amp section or when replacing any parts.

[IDLING ADJUSTMENT]

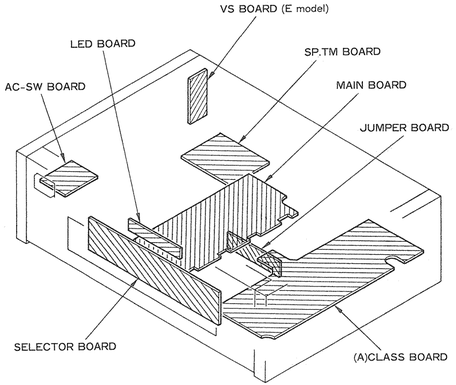
Procedure :
Set the ATTENUATOR control as low as possible and adjust RT301 (L-CH) and RT351 (R-CH) so that the voltmeter reads 7mV at TP301 (L-CH) and TP351 (R-CH).

Adjustment Location : power board



SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

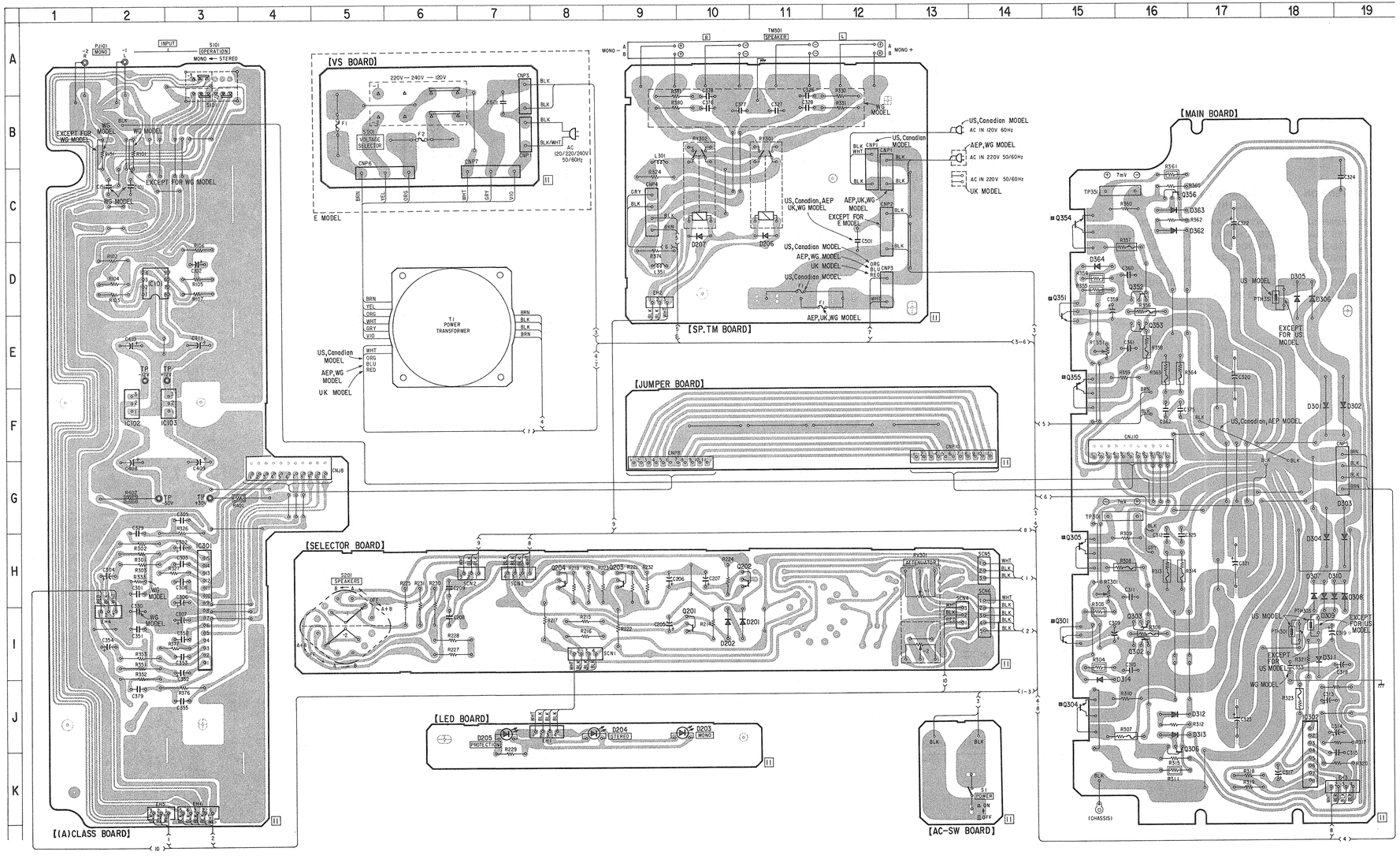


● Semiconductor Locations

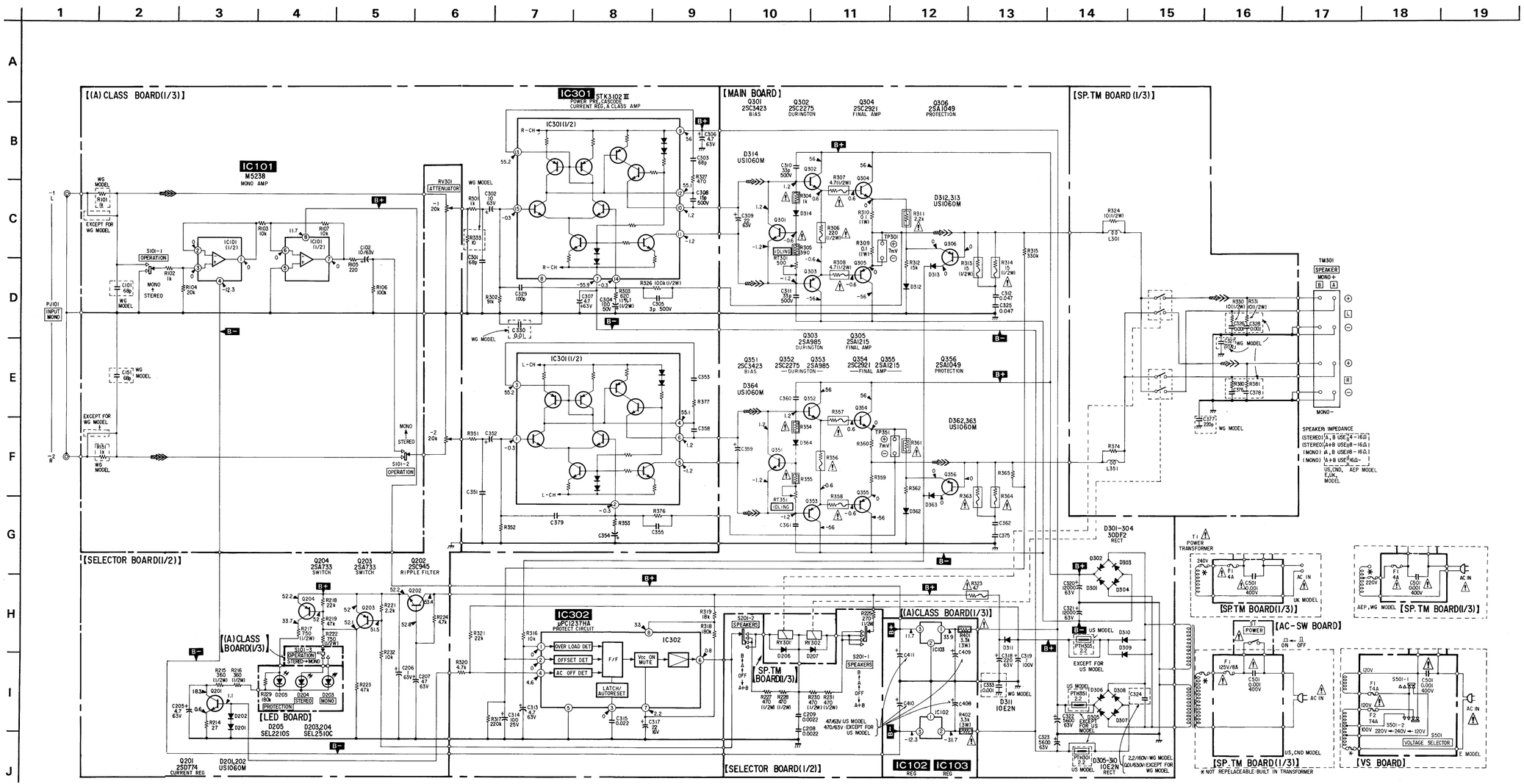
Ref. No.	Location
D201	I-10
D202	I-10
D203	J-10
D204	J-8
D205	J-7
D206	C-11
D207	C-10
D301	E-18
D302	F-19
D303	G-19
D304	G-18
D305	C-18
D306	C-18
D307	G-18
D308	G-19
D309	G-18
D310	G-18
D311	H-18
D312	J-16
D313	J-16
D314	I-15
D362	C-16
D363	C-16
D364	D-15
IC101	D-2
IC102	F-2
IC103	F-3
IC301	H-3
IC302	I-18
Q201	I-10
Q202	H-10
Q203	H-9
Q204	H-8
Q301	I-15
Q302	I-16
Q303	I-16
Q304	J-15
Q305	H-15
Q306	J-16
Q351	D-15
Q352	D-16
Q353	E-16
Q354	C-15
Q355	E-15
Q356	C-16

Note:
● ○—— : parts extracted from the component side.
● ■ : parts mounted on the conductor side.

3-2. PRINTED WIRING BOARDS



3-3. SCHEMATIC DIAGRAM



● Semiconductor Lead Layouts

M5F78M12

2SA985A-P
2SC2275-P

10E2N

M5F79M12

2SC3423-O

30DF2

2SA1049

2SC945-P

SEL2210S

2SA1175-HFE

2SD774-34

SEL2510C

2SA1215M-O
2SC2921M-O

1SS120

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Components for right channel have same values as for left channel. Reference numbers are coded from 300.
- : nonflammable resistor.
- : fusible resistor.

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark: PHONO
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  : PHONO
  WG: West Germany
  CND: Canadian

SECTION 4
EXPLODED VIEW AND PARTS LIST

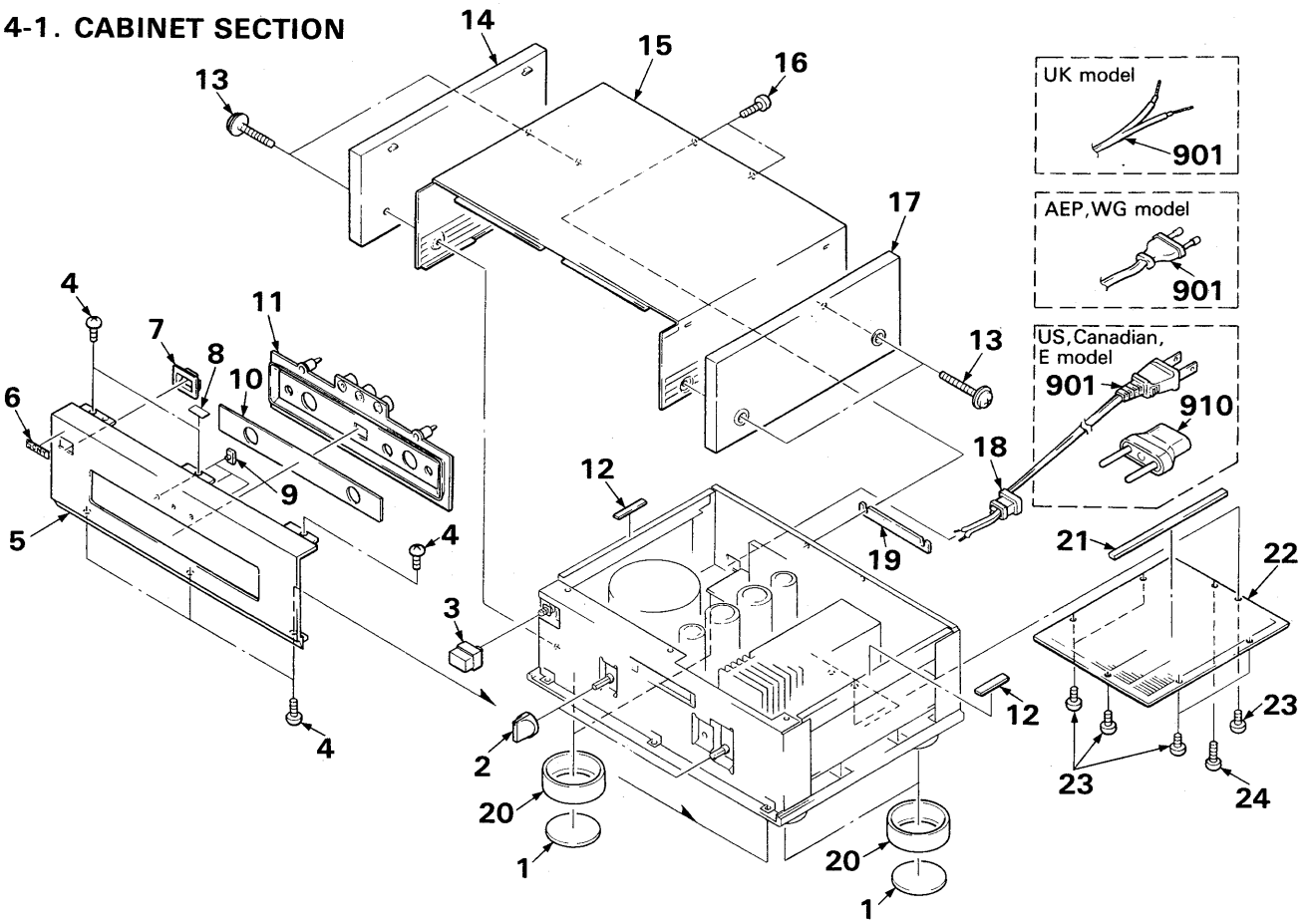
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

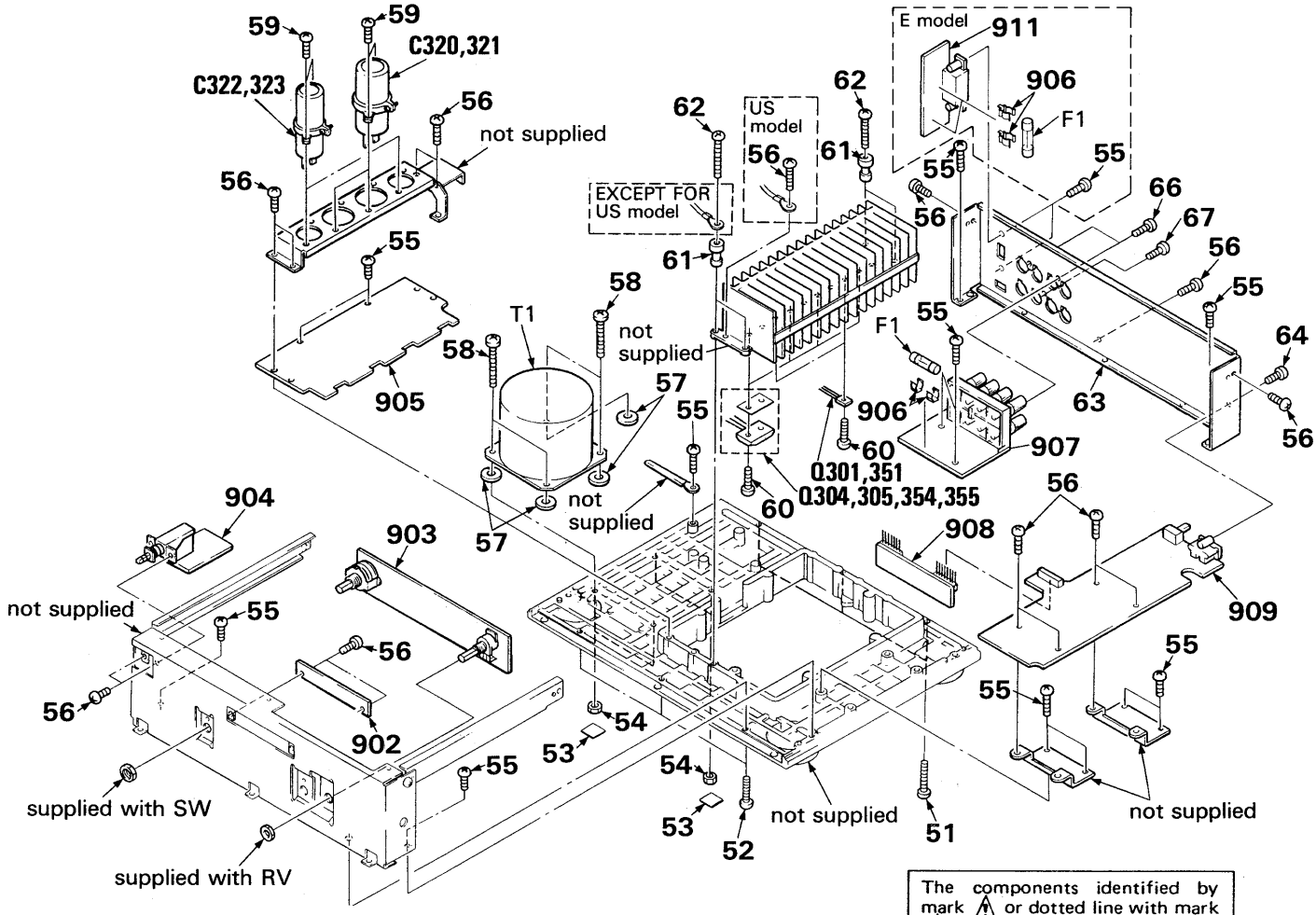
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

4-1. CABINET SECTION



No.	Part No.	Description	Ramerks
1	*4-923-850-01	FOOT (DIA. 46)	
2	4-916-745-01	KNOB (DIA.21)	
3	4-917-460-01	KNOB, POWER	
4	7-682-547-09	SCREW +BVTT 3X6 (S)	
5	4-933-018-01	(E).....PANEL, FRONT	
	4-933-018-11	(US,Canadian)...PANEL, FRONT	
	4-933-018-21	(AEP,WG,UK).....PANEL, FRONT	
6	4-908-884-01	EMBLEM, SONY	
7	4-908-044-11	ESCUTCHEON, POWER KNOB	
8	*3-346-067-21	(UK)...SPACER (C)	
9	4-884-612-11	INDICATOR, EJECT	
10	4-933-013-11	(EXCEPT FOR E)...PLATE (AL), ORNAMENTAL	
	4-933-013-21	(E).....PLATE (AL), ORNAMENTAL	
11	4-933-014-01	ESCUTCHEON	
12	*2-257-517-00	(UK)....CUSHION, CASE RETAINER	
13	4-885-979-21	(EXCEPT FOR UK)...SCREW (4X28)	
	4-847-802-00	(UK).....SCREW	
14	X-4933-001-1	(US,Canadian,E,AEP) ...PLATE (LEFT) ASSY, SIDE	
	X-4933-003-1	(WG).....PLATE (LEFT) ASSY, SIDE	
15	4-933-020-01	(EXCEPT FOR AE2)...CASE	
	4-933-020-11	(AE2).....CASE	
16	7-685-873-09	SCREW +BVTT 3X10 (S)	
17	X-4933-002-1	(US,Canadian,E,AEP)...PLATE (RIGHT) ASSY, SIDE	
	X-4933-004-1	(WG).....PLATE (RIGHT) ASSY, SIDE	
18	*3-703-244-00	(EXCEPT FOR E)...BUSHING (2104), CORD	
	*3-703-571-11	(E).....BUSHING (S) (4516), CORD	
19	*4-929-232-01	SPACER	
20	4-923-882-02	RING(LARGE-16), ORNAMENTAL,FOOT	
21	*4-916-782-21	DAMPER	
22	*4-916-732-01	BOARD, BOTTOM	
23	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
24	7-685-874-09	SCREW +BVTT 3X12 (S)	
901	⚠1-574-381-11	(E)...CORD, POWER	
910	⚠1-526-565-00	(E)...AC PLUG ADAPTOR	

4-2. SHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

No.	Part No.	Description	Ramerks
51	7-685-876-09	SCREW +BVTT 3X16 (S)	
52	7-685-873-09	SCREW +BVTT 3X10 (S)	
53	*4-929-266-01	CUSHION	
54	7-684-024-04	N 4, TYPE 2	
55	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
56	7-682-547-09	SCREW +BVTT 3X6 (S)	
57	4-885-984-21	WASHER	
58	7-682-566-09	SCREW +B 4X20	
59	7-685-872-09	SCREW +BVTT 3X8 (S)	
60	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
61	4-933-025-11	(US)...COLLAR	
62	7-685-152-19	(US)...SCREW +P 3X25 TYPE2 SLIT	
	7-685-650-79	(EXCEPT FOR US)...SCREW +BVTP 3X16 TYPE2 SLIT	
63	*4-933-015-01	(US,Canadian,AE1,WG,UK)...PANEL, BACK	
	*4-933-015-11	(AE2).....PANEL, BACK	
	*4-933-015-21	(E).....PANEL, BACK	
64	7-621-849-00	SCREW, TAPPING	
66	7-685-647-79	SCREW +BVTP 3X10 TYPE2 SLIT	
67	7-621-849-00	(WG)..... SCREW, TAPPING	
	7-685-647-79	(EXCEPT FOR WG)...SCREW +BVTP 3X10 TYPE2 SLIT	
901	⚠1-557-577-11	(US,Canadian)...CORD, POWER	
	⚠1-574-804-11	(UK).....CORD, POWER	
	⚠1-574-805-11	(AEP,WG).....CORD, POWER	

No.	Part No.	Description	Ramerks
902	*1-631-657-11	PC BOARD, LED	
903	*1-631-654-11	PC BOARD, SELECTOR	
904	*1-631-870-11	PC BOARD, AC-SW	
905	*A-4333-769-A	(US).....MOUNTED PCB, MAIN (B)	
	*A-4333-770-A	(Canadian)...MOUNTED PCB, MAIN (B)	
	*A-4333-771-A	(WG).....MOUNTED PCB, MAIN (B)	
	*A-4333-772-A	(UK).....MOUNTED PCB, MAIN (B)	
	*A-4333-773-A	(E).....MOUNTED PCB, MAIN (B)	
	*A-4333-783-A	(AEP).....MOUNTED PCB, MAIN (B)	
906	1-533-183-11	(E,AEP,WG,UK)...HOLDER, FUSE	
	1-533-185-11	(US,Canadian)...HOLDER, FUSE	
907	*1-631-658-11	PC BOARD, SP.TM	
908	*1-631-656-11	PC BOARD, JUMPER	
909	*1-631-655-11	PC BOARD, (A) CLASS	
911	*1-631-652-11	(E)...PC BOARD, VS	
C320	1-125-460-11	CAP, ELECT 12000MF	
C321	1-125-460-11	CAP, ELECT 12000MF	
C322	1-125-558-11	CAP, ELECT 5600MF	
C323	1-125-558-11	CAP, ELECT 5600MF	
F1	⚠1-532-350-00	(E,AEP,WG,UK)...FUSE, TIME-LAG T4	
F1	⚠1-532-510-00	(US,Canadian)...FUSE, GLASS TUBE 8A	
T1	⚠1-449-787-11	(AE1,WG).....TRANSFORMER, POWER	
T1	⚠1-449-788-11	(E).....TRANSFORMER, POWER	
T1	⚠1-449-789-11	(UK).....TRANSFORMER, POWER	
T1	⚠1-449-790-11	(US,Canadian)...TRANSFORMER, POWER	
T1	⚠1-449-792-11	(AE2).....TRANSFORMER, POWER	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

WG: West Germany

Ref.No	Part No.	Description
901	⚠ 1-557-577-11	(US, Canadian)....CORD, POWER
901	⚠ 1-574-804-11	(UK)....CORD, POWER
901	⚠ 1-574-805-11	(AEP, WG)....CORD, POWER
902	*1-631-657-11	PC BOARD, LED
903	*1-631-654-11	PC BOARD, SELECTOR
904	*1-631-870-11	PC BOARD, AC-SW
905	*A-4333-769-A	(US)....MOUNTED PCB, MAIN (B)
905	*A-4333-770-A	(Canadian)....MOUNTED, PCB, MAIN (B)
905	*A-4333-771-A	(WG)....MOUNTED PCB, MAIN (B)
905	*A-4333-772-A	(UK)....MOUNTED PCB, MAIN (B)
905	*A-4333-773-A	(E)....MOUNTED PCB, MAIN(B)
905	*A-4333-783-A	(AEP)....MOUNTED PCB, MAIN (B)
906	*1-533-183-11	(AEP, UK, WG)....HOLDER, FUSE
906	*1-533-185-11	(US, Canadian)....HOLDER, FUSE
907	*1-631-658-11	PC BOARD, SP.TM
908	*1-631-656-11	PC BOARD, JUMPER
909	*1-631-655-11	PC BOARD, (A) CLASS
910	⚠ 1-526-565-00	(E)....AC PLUG ADAPTOR
911	*1-631-652-11	(E)....PC BOARD, VS

CAPACITOR

C101	1-104-276-11	(WG).... POLYSTYRENE	68PF	10%	50V
C102	1-124-915-11	ELECT	10MF	20%	63V
C151	1-104-276-11	(WG).... POLYSTYRENE	68PF	10%	50V
C205	1-123-369-00	ELECT	4.7MF	20%	63V
C206	1-123-380-00	ELECT	1MF	20%	63V
C207	1-124-918-11	ELECT	47MF	20%	63V
C208	1-130-475-00	MYLAR	0.0022MF	5%	50V
C209	1-130-475-00	MYLAR	0.0022MF	5%	50V
C301	1-104-276-11	POLYSTYRENE	68PF	10%	50V
C302	1-124-915-11	ELECT	10MF	20%	63V
C303	1-104-276-11	POLYSTYRENE	68PF	10%	50V
C304	1-124-130-00	ELECT	100MF	20%	63V
C305	1-107-276-11	MICA	3PF	0.5PF	500V
C306	1-123-369-00	ELECT	4.7MF	20%	63V
C307	1-123-369-00	ELECT	4.7MF	20%	63V
C308	1-107-206-00	MICA	15PF	5%	500V
C309	1-124-929-11	ELECT	22MF	20%	63V
C310	1-107-159-00	MICA	33PF	5%	500V
C311	1-107-159-00	MICA	33PF	5%	500V
C312	1-136-161-00	FILM	0.047MF	5%	50V
C313	1-123-369-00	ELECT	4.7MF	20%	63V
C314	1-123-333-00	ELECT	100MF	20%	25V
C315	1-130-487-00	MYLAR	0.022MF	5%	50V
C317	1-123-330-00	ELECT	22MF	20%	16V
C318	1-124-919-11	ELECT	220MF	20%	63V
C319	1-124-499-11	ELECT	1MF	20%	100V
C320	1-125-460-11	ELECT	12000MF	20%	63V
C321	1-125-460-11	ELECT	12000MF	20%	63V
C322	1-125-558-11	ELECT	5600MF	20%	63V
C323	1-125-558-11	ELECT	5600MF	20%	63V
C324	1-136-880-11	(WG)....FILM	2.2MF	10%	160V
C324	1-136-601-11	(EXCEPT FOR WG).... FILM	0.01MF	10%	630V
C325	1-136-161-00	FILM	0.047MF	5%	50V
C326	1-130-471-00	(WG)....FILM	0.001MF	5%	50V
C327	1-109-621-00	(WG)....MICA	220PF	5%	500V
C328	1-130-471-00	(WG)....FILM	0.001MF	5%	50V
C329	1-104-278-91	POLYSTYRENE	100PF	5%	50V
C330	1-161-370-00	(WG).... CERAMIC	0.01MF	30%	25V
C333	1-130-471-00	(WG)....MYLAR	0.001MF	5%	50V
C351	1-104-276-11	POLYSTYRENE	68PF	10%	50V
C352	1-124-915-11	ELECT	10MF	20%	63V
C353	1-104-276-11	POLYSTYRENE	68PF	10%	50V
C354	1-124-130-00	ELECT	100MF	20%	63V
C355	1-107-276-11	MICA	3PF	0.5PF	500V
C358	1-107-206-00	MICA	15PF	5%	500V
C359	1-124-929-11	ELECT	22MF	20%	63V
C360	1-107-159-00	MICA	33PF	5%	500V
C361	1-107-159-00	MICA	33PF	5%	500V
C362	1-136-161-00	FILM	0.047MF	5%	50V
C375	1-136-161-00	FILM	0.047MF	5%	50V
C376	1-130-471-00	(WG)....FILM	0.001MF	5%	50V
C377	1-109-621-00	(WG)....MICA	220PF	5%	500V
C378	1-130-471-00	(WG)....FILM	0.001MF	5%	50V
C379	1-104-278-91	POLYSTYRENE	100PF	5%	50V
C408	1-124-918-11	(US)....ELECT	47MF	20%	63V
C408	1-123-377-00	(EXCEPT FOR US).... ELECT	470MF	20%	63V
C409	1-124-918-11	(US)....ELECT	47MF	20%	63V
C409	1-123-377-00	(EXCEPT FOR US).... ELECT	470MF	20%	63V
C410	1-124-918-11	(US)....ELECT	47MF	20%	63V
C410	1-123-377-00	(EXCEPT FOR US).... ELECT	470MF	20%	63V
C411	1-124-918-11	(US)....ELECT	47MF	20%	63V
C411	1-123-377-00	(EXCEPT FOR US).... ELECT	470MF	20%	63V
C501	⚠ 1-161-741-00	CERAMIC	0.001MF	10%	400V

CNJ8	*1-563-381-11	SOCKET, CONNECTOR 11P
CNJ10	*1-563-381-11	SOCKET, CONNECTOR 11P
CNP1	*1-564-321-00	(E, AEP, UK, WG)....PIN, CONNECTOR 2P
CNP2	*1-565-792-11	PIN, CONNECTOR 2P
CNP3	*1-564-321-00	PIN, CONNECTOR 2P
CNP4	*1-564-241-00	PIN, CONNECTOR 4P
CNP5	*1-564-241-00	PIN, CONNECTOR 4P
CNP6, CNP7	*1-564-687-11	(E)....PIN CONNECTOR 3P
CNP8	1-568-203-11	PIN, CONNECTOR (PC BOARD) 11P
CNP10	1-568-203-11	PIN, CONNECTOR (PC BOARD) 11P
D201	8-719-912-20	DIODE 1SS120
D202	8-719-912-20	DIODE 1SS120
D203	8-719-303-00	DIODE SEL2510C
D204	8-719-303-00	DIODE SEL2510C
D205	8-719-301-39	DIODE SEL2210S
D206	8-719-912-20	DIODE 1SS120
D207	8-719-912-20	DIODE 1SS120

Ref.No	Part No.	Description
D301	8-719-230-02	DIODE 30DF2
D302	8-719-230-02	DIODE 30DF2
D303	8-719-230-02	DIODE 30DF2
D304	8-719-230-02	DIODE 30DF2
D305	8-719-200-77	DIODE 10E2N
D306	8-719-200-77	DIODE 10E2N
D307	8-719-200-77	DIODE 10E2N
D308	8-719-200-77	DIODE 10E2N
D309	8-719-200-77	DIODE 10E2N
D310	8-719-200-77	DIODE 10E2N
D311	8-719-200-77	DIODE 10E2N
D312	8-719-912-20	DIODE 1SS120
D313	8-719-912-20	DIODE 1SS120
D314	8-719-912-20	DIODE 1SS120
D362	8-719-912-20	DIODE 1SS120
D363	8-719-912-20	DIODE 1SS120
D364	8-719-912-20	DIODE 1SS120
EH1	*1-564-507-11	PLUG, CONNECTOR 4P
EH2	*1-564-506-11	PLUG, CONNECTOR 3P
EH3	*1-564-507-11	PLUG, CONNECTOR 4P
EH4	*1-564-506-11	PLUG, CONNECTOR 3P
EH5	*1-564-506-11	PLUG, CONNECTOR 3P
EH6	*1-564-508-11	PLUG, CONNECTOR 5P
F1	⚠1-532-350-00	(E, AEP, UK, WG)...FUSE, TIME-LAG T4A
F1	⚠1-532-510-00	(US, Canadian)....FUSE, GLASS TUBE 8A
F2	⚠1-532-350-00	(E)....FUSE, TIME-LAG T4A
IC101	8-759-602-83	IC M5238P
IC102	8-759-604-39	IC M5F78M12
IC103	8-759-604-45	IC M5F79M12
IC301	8-749-920-70	IC STK3102-3
IC302	8-759-111-68	IC UPC1237HA
L301	*1-420-872-00	COIL, AIR CORE
L351	*1-420-872-00	COIL, AIR CORE
PJ101	1-568-250-11	(US,Canadian,AEP,UK,WG)....JACK,PIN 2P(INPUT MONO)
PJ101	1-568-250-21	(E)....JACK, PIN 2P(INPUT MONO)
PTH301	1-202-850-00	(US)....THERMISTOR (POSITIVE)
PTH303	1-202-850-00	(US)....THERMISTOR (POSITIVE)
PTH351	1-202-850-00	(US)....THERMISTOR (POSITIVE)
Q201	8-729-140-96	TRANSISTOR 2SD774-34
Q202	8-729-194-57	TRANSISTOR 2SC945-P
Q203	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q204	8-729-119-76	TRANSISTOR 2SA1175-HFE
Q301	8-729-203-45	TRANSISTOR 2SC3423-O
Q302	8-729-127-53	TRANSISTOR 2SC2275-P
Q303	8-729-190-53	TRANSISTOR 2SA985A-P
Q304	8-729-320-03	TRANSISTOR 2SC2921M-O
Q305	8-729-320-01	TRANSISTOR 2SA1215M-O
Q306	8-729-204-91	TRANSISTOR 2SA1049
Q351	8-729-203-45	TRANSISTOR 2SC3423-O
Q352	8-729-127-53	TRANSISTOR 2SC2275-P
Q353	8-729-190-53	TRANSISTOR 2SA985A-P
Q354	8-729-320-03	TRANSISTOR 2SC2921M-O
Q355	8-729-320-01	TRANSISTOR 2SA1215M-O
Q356	8-729-204-91	TRANSISTOR 2SA1049

RESISTOR

Ref.No	Part No.	Description			
R101	1-247-713-11	(WG)....CARBON	1K	5%	1/4W
R102	1-247-713-11	CARBON	1K	5%	1/4W
R103	1-247-725-11	CARBON	10K	5%	1/4W
R104	1-249-583-11	CARBON	20K	5%	1/4W
R105	1-247-704-11	CARBON	220	5%	1/4W
R106	1-249-469-11	CARBON	100K	5%	1/4W
R107	1-247-725-11	CARBON	10K	5%	1/4W
R151	1-247-713-11	(WG)....CARBON	1K	5%	1/4W
R214	1-247-693-11	CARBON	27	5%	1/4W
R215	1-247-229-00	CARBON	360	5%	1/2W
R216	1-247-229-00	CARBON	360	5%	1/2W
R217	1-247-237-00	CARBON	750	5%	1/2W
R218	1-249-462-11	CARBON	22K	5%	1/4W
R219	1-249-465-11	CARBON	47K	5%	1/4W
R221	1-247-717-11	CARBON	2.2K	5%	1/4W
R222	1-247-237-00	CARBON	750	5%	1/2W
R223	1-249-465-11	CARBON	47K	5%	1/4W
R224	1-247-721-11	CARBON	4.7K	5%	1/4W
R225	1-247-744-11	CARBON	270	5%	1/2W
R227	1-247-747-11	CARBON	470	5%	1/2W
R228	1-247-747-11	CARBON	470	5%	1/2W
R229	1-247-703-11	CARBON	180	5%	1/4W
R230	1-247-747-11	CARBON	470	5%	1/2W
R231	1-247-747-11	CARBON	470	5%	1/2W
R232	1-247-725-11	CARBON	10K	5%	1/4W
R301	1-247-713-11	CARBON	1K	5%	1/4W
R302	1-249-599-11	CARBON	91K	5%	1/4W
R303	1-249-797-11	CARBON	620	1%	1/2W
R304	⚠1-247-713-11	CARBON	1K	5%	1/4W
R305	⚠1-247-707-11	CARBON	390	5%	1/4W
R306	⚠1-219-030-11	FUSIBLE	220	5%	1/2W
R307	⚠1-217-989-11	FUSIBLE	4.7	5%	1/2W
R308	⚠1-217-989-11	FUSIBLE	4.7	5%	1/2W
R309	1-217-611-00	METAL PLATE	0.1		1W
R310	1-217-611-00	METAL PLATE	0.1		1W
R311	⚠1-247-717-11	CARBON	2.2K	5%	1/4W
R312	1-249-460-11	CARBON	15K	5%	1/4W
R313	⚠1-219-002-11	FUSIBLE	15	5%	1/2W
R314	⚠1-219-002-11	FUSIBLE	15	5%	1/2W
R315	1-247-891-00	CARBON	330K	5%	1/4W
R316	1-247-725-11	CARBON	10K	5%	1/4W
R317	1-247-887-00	CARBON	220K	5%	1/4W
R318	1-247-885-00	CARBON	180K	5%	1/4W
R319	1-249-461-11	CARBON	18K	5%	1/4W
R320	1-247-721-11	CARBON	4.7K	5%	1/4W
R321	1-249-462-11	CARBON	22K	5%	1/4W
R323	⚠1-212-849-00	FUSIBLE	4.7	5%	1/4W
R324	1-247-727-11	CARBON	10	5%	1/2W
R326	1-249-850-11	CARBON	100K	1%	1/2W
R327	1-247-708-11	CARBON	470	5%	1/4W
R330	1-247-727-11	(WG)....CARBON	10	5%	1/2W
R331	1-247-727-11	(WG)....CARBON	10	5%	1/2W
R333	1-247-688-11	(WG)....CARBON	10	5%	1/4W
R351	1-247-713-11	CARBON	1K	5%	1/4W
R352	1-249-599-11	CARBON	91K	5%	1/4W
R353	1-249-797-11	CARBON	620	1%	1/2W
R354	⚠1-247-713-11	CARBON	1K	5%	1/4W
R355	⚠1-247-707-11	CARBON	390	5%	1/4W
R356	⚠1-219-030-11	FUSIBLE	220	5%	1/2W
R357	⚠1-217-989-11	FUSIBLE	4.7	5%	1/2W
R358	⚠1-217-989-11	FUSIBLE	4.7	5%	1/2W
R359	1-217-611-00	METAL PLATE	0.1		1W
R360	1-217-611-00	METAL PLATE	0.1		1W
R361	⚠1-247-717-11	CARBON	2.2K	5%	1/4W
R362	1-249-460-11	CARBON	15K	5%	1/4W
R363	⚠1-219-002-11	FUSIBLE	15	5%	1/2W
R364	⚠1-219-002-11	FUSIBLE	15	5%	1/2W
R365	1-247-887-00	CARBON	220K	5%	1/4W
R374	1-247-727-11	CARBON	10	5%	1/2W
R376	1-249-850-11	CARBON	100K	1%	1/2W
R377	1-247-708-11	CARBON	470	5%	1/4W
R380	1-247-727-11	(WG)....CARBON	10	5%	1/2W

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No	Part No.	Description				
R381	1-247-727-11	(WG)....CARBON	10	5%	1/2W	
R401 ⚠	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R402 ⚠	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
RT301	1-237-455-11	RES, ADJ, CARBON	500			
RT351	1-237-455-11	RES, ADJ, CARBON	500			
RV301	1-238-656-11	RES, VAR, CARBON 20K/20K (ATTENUATOR)				
RY301	1-515-676-11	RELAY				
RY302	1-515-676-11	RELAY				
S1 ⚠	**1-554-538-00**	**SWITCH, PUSH (AC POWER)(1 KEY)**				
S101	**1-572-010-11**	**SWITCH, SLIDE (INPUT OPERATION)**				
S201	**1-572-008-11**	**SWITCH, ROTARY (SPEAKERS)**				
S501	1-572-009-11	(E)....SELECTOR, VOLTAGE				
T1 ⚠	**1-449-787-11**	**(AEP, WG)....TRANSFORMER, POWER**				
T1 ⚠	**1-449-789-11**	**(UK)....TRANSFORMER, POWER**				
T1 ⚠	**1-449-790-11**	**(US, Canadian)....TRANSFORMER, POWER**				
T1 ⚠	1-449-788-11	(E)....TRANSFORMER, POWER				
TM301	**1-537-246-11**	(US, Canadian, E, AE1, UK)...**TERMINAL BOARD (SPEAKER)**				
TM301	1-537-246-31	**(WG)....TERMINAL BOARD (SPEAKER)**				
TM301	1-537-246-21	**(AE2)....TERMINAL BOARD (SPEAKER)**				

ACCESORIES AND PACKING MATERIALS
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*2-135-414-01	SHEET, PROTECTION
3-703-450-11	(US)....INSTRUCTION
3-750-794-11	(US,Canadian,E,AE1,UK) ...MANUAL, INSTRUCTION
3-750-794-42	(AE2,WG).....MANUAL, INSTRUCTION
4-847-802-00	SCREW
*4-933-001-01	CUSHION
*4-933-003-01	(E).....INDIVIDUAL CARTON
*4-933-004-01	(EXCEPT FOR E)...INDIVIDUAL CARTON

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note:** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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